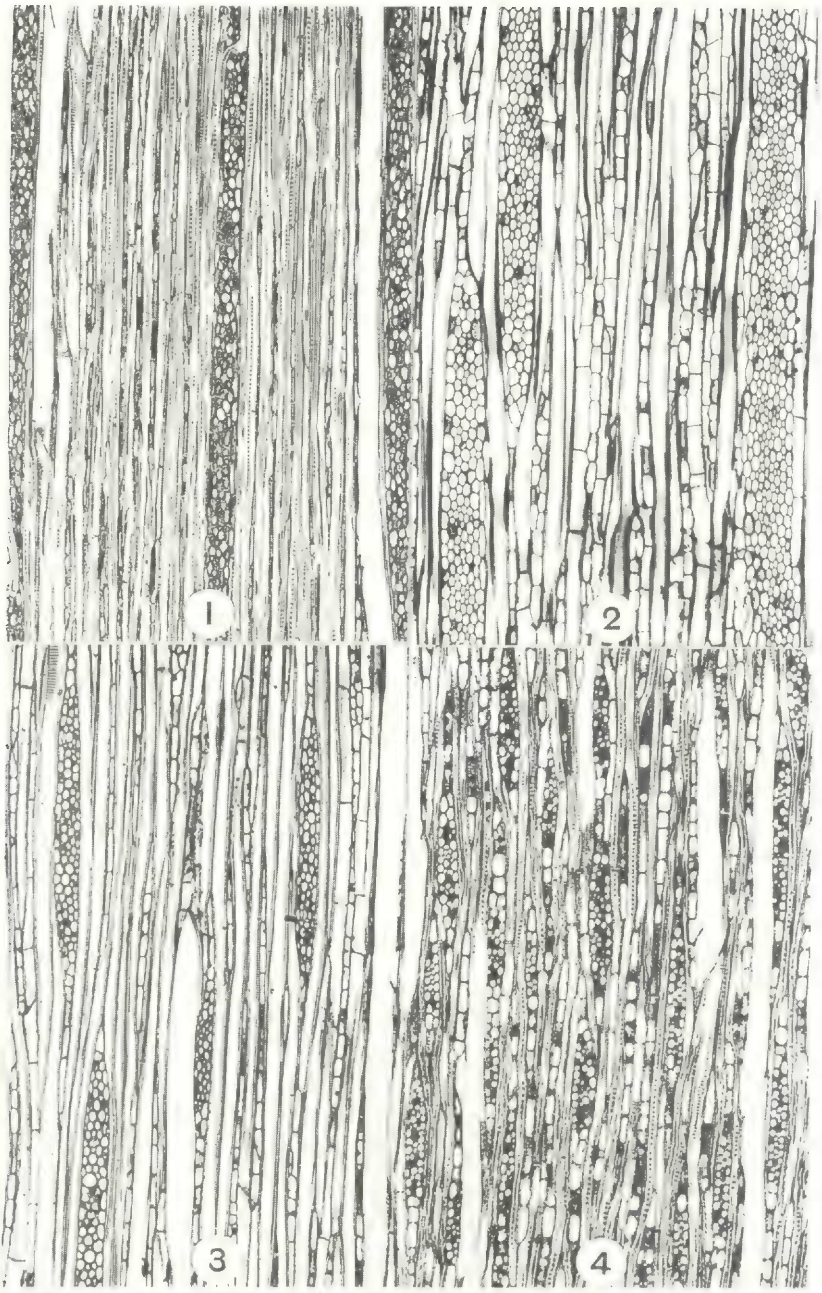
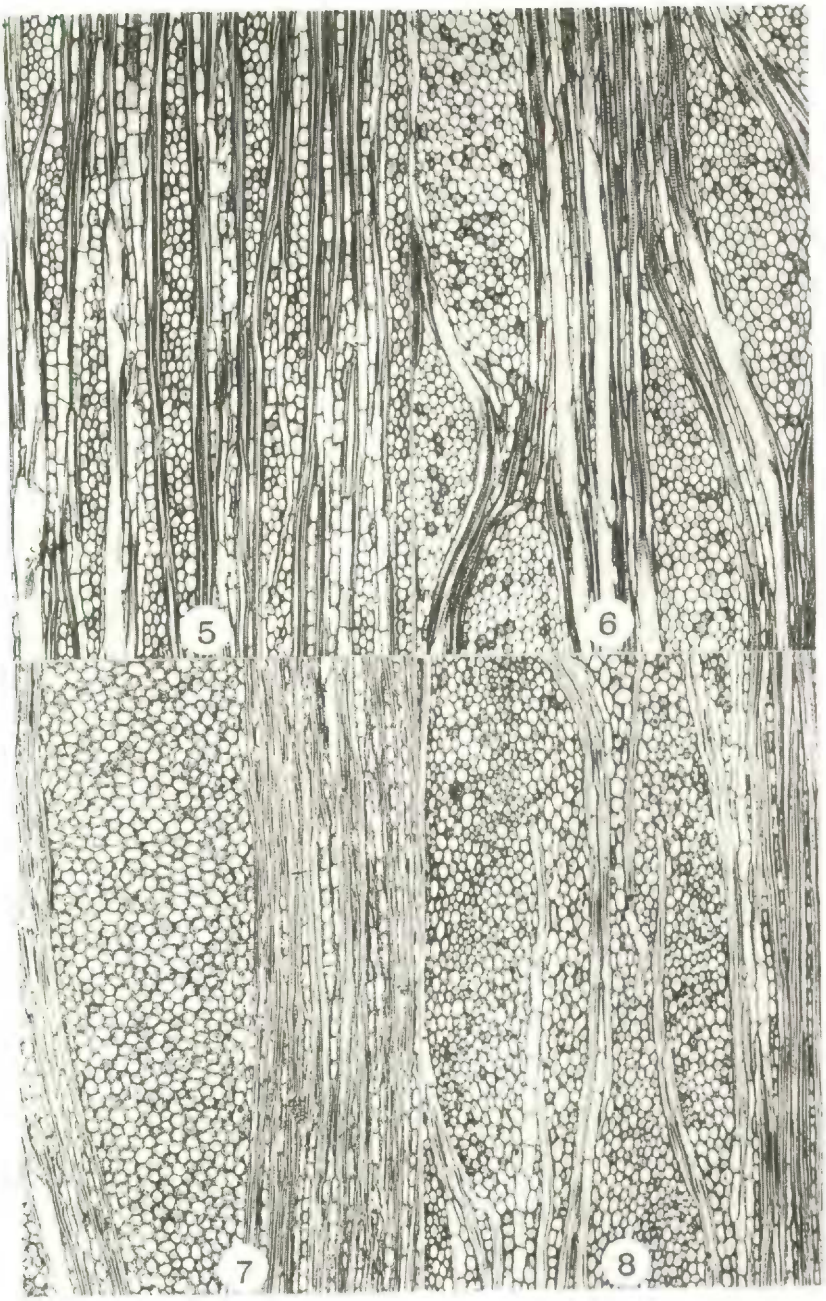
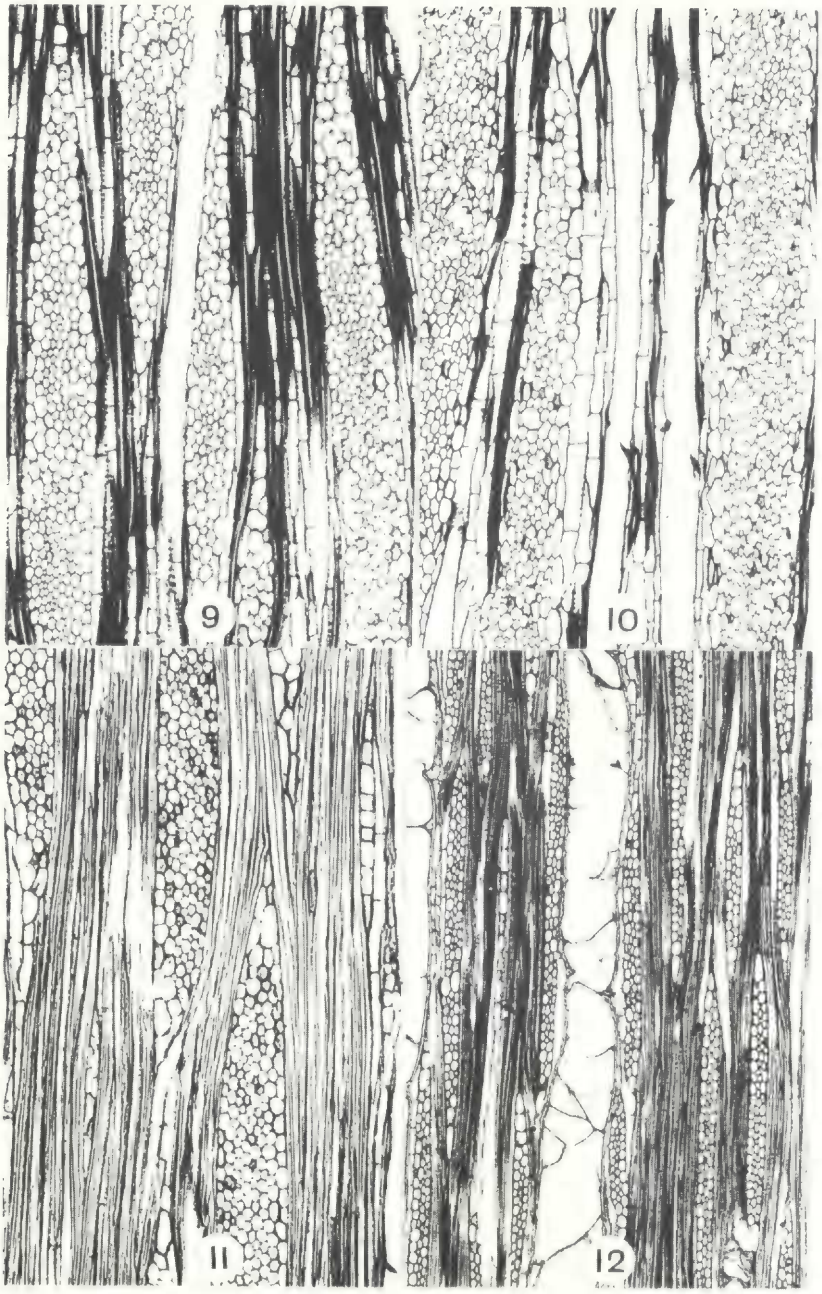


Comparative Morphology of the Icacinaceae

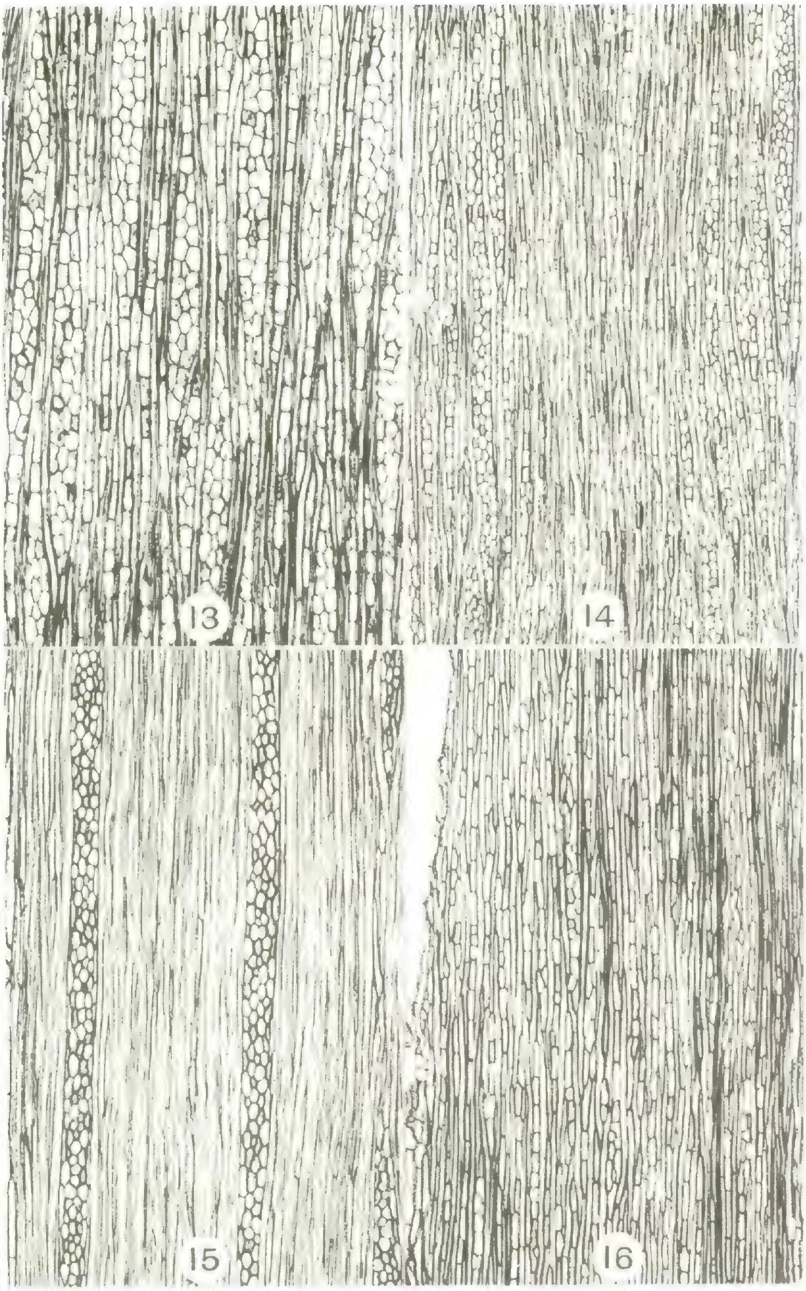


Comparative Morphology of the Icacinaceae



COMPARATIVE MORPHOLOGY OF THE ICACINACEAE

FULL-TONE — MERIDEN



Comparative Morphology of the Icacinaceae

NEW SPECIES, VARIETIES AND COMBINATIONS FROM THE COLLECTIONS OF THE ARNOLD ARBORETUM

ALFRED REHDER

Cephalotaxus Harringtonia (Forbes) K. Koch, Dendrol. **2,2:** 102 (1873), sensu stricto. — Ascherson & Graebner, Syn. Mitteleur. Fl. **1:** 181 (1897), sensu stricto. — Schneider in Silva Tarouca, Uns. Freil.-Nadelh. 162, fig. 159 (1913), sensu stricto. — Koidzumi in Bot. Mag. Tokyo, **44:** 97 (1930).

Taxus Harringtonia Knight ex Forbes, Pinet. Woburn. 217, t. 66 (1839).
Taxus Inukaja Knight ex Loudon, Encycl. Trees, 943 (1842).
Cephalotaxus pedunculata Siebold & Zuccarini in Abh. Akad. Wiss. Münch. **4,3:** 234 (Fl. Jap. Fam. Nat. **2:** 108) (1846). — Henry in Elwes & Henry, Trees Gt. Brit. Irel. **6:** 1471 (1912).
Cephalotaxus drupacea var. *β. pedunculata* (Sieb. & Zucc.) Miquel in Ann. Mus. Bot. Lugd.-Bat. **3:** 169 (Prol. Fl. Jap. 333) (1867). — Wilson, Conif. Taxads Jap. 8 (1916).
Taxus Sinensis Knight ex Gordon, Pinet. Suppl. 21 (1862) pro syn. *C. pedunculatae.*
Cephalotaxus drupacea var. *Harringtonia* (Forbes) Pilger in Engler, Pflanzenr. (Heft 18) IV.**5:** 102 (1903).

As most authors have adopted the name *C. drupacea* as the name for this species, the full synonymy is given above. Some authors of those who have kept *C. drupacea* as a distinct species, have used *C. Harringtonia* for *C. pedunculata,* as Koch (1873), Ascherson & Graebner (1897), Schneider (1913), Rehder (1914); while almost all authors who united the two species, have done so under *C. drupacea,* as Miquel (1867), Pilger (1903), Wilson (1916), Rehder (1927), except Koidzumi (1930), who accepted *C. Harringtonia* for this concept.

Henry (l.c.) is of the opinion that *C. pedunculata* is probably a hybrid between *C. drupacea* and *C. Fortuni* Hook. If this should be the case, the binary name of the hybrid would be *C. Harringtonia* and *C. drupacea* should be restored to specific rank. The remarks by Rothert (in Ber. Deutsch. Bot. Ges. **17:** 279, foot-note) on the leaf anatomy of *C. Fortuni* do not seem to bear out the possibility of hybridity.

Though it is to be regretted that the nomenclatural type of this species is a plant of doubtful origin, and apparently known only in cultivation, the fact that *"Harringtonia"* is the oldest specific epithet leaves no choice but to accept it under *Cephalotaxus* as the correct binomial. The fol-

lowing two binomial combinations under *C. Harringtonia* have already been made:

Cephalotaxus Harringtonia f. **sphaeralis** (Mast.) Rehder in Mitt. Deutsch. Dendr. Ges. **1915**(24): 213 (1916).

Cephalotaxus pedunculata var. *sphaeralis* Masters in Gard. Chron. n. ser. **21**; 113, fig. 23 (1884).

Cephalotaxus Harringtonia var. **drupacea** (Sieb. & Zucc.) Koidzumi in Bot. Mag. Tokyo, **44**: 98 (1930).

Cephalotaxus drupacea Siebold & Zuccarini in Abh. Akad. Wiss. Münch. **4,3**: 232 (Fl. Jap. Fam. Nat. **2**: 108 (1846). — Endlicher, Syn. Conif. 239 (1847). — Wilson, Conif. Taxads Jap. 6 (1916), which see for additional literature and synonyms.

In addition to these two combinations, the following new combinations are proposed here:

Cephalotaxus Harringtonia f. **fastigiata** (Carr.), grad. nov.[1]

Podocarpus coraianus Siebold in Jaarb. Nederl. Maatsch. Anmoed. Tuinb. **1844**: 34 (1844), nom.

Podocarpus koraiana Endlicher, Syn. Conif. 217 (1847). — Carrière, Traité Conif. 464 (1855); in Rev. Hort. **1863**: 349, fig. (1863).

Cephalotaxus koraiana Hort. ex Gordon, Pinet. 275 (1858), pro synon. — Rothert in Ber. Deutsch. Bot. Ges. **17**: 277 (1899).

Cephalotaxus pedunculata fastigiata Carrière, Prod. Fix. Var. Végét. 44, fig. 1 (1865); Traité Conif. ed. 2, 717 (1867).

Cephalotaxus ? Buergeri Miquel in Ann. Mus. Bot. Lugd.-Bat. **3**: 169 (Prol. Fl. Jap. 333) (1867).

Cephalotaxus Harringtonia l. *koraiana* K. Koch ex Ascherson & Graebner, Syn. Mitteleur. Fl. **1**: 181 (1897).

Cephalotaxus drupacea f. *fastigiata* (Carr.) Pilger in Engler, Pflanzenr. (Heft 18) IV. **5**: 103 (1903). — Wilson, Conif. Taxads Jap. 8 (1916). — Hornibrook in Chittenden, Cult. Conif. Rep. Conif. Confer. 80 (1932) "var. *pedunculata* f.*f.*"

Cephalotaxus Harringtonia var. *fastigiata* Schneider in Silva Tarouca, Uns. Freil.-Nadelh. 162, fig. 161 (1913).

Cephalotaxus Harringtonia var. *coraiana* Koidzumi in Bot. Mag. Tokyo, **44**: 98 (1930).

[1] I have adopted the term gradus novus, new rank, to indicate that the name proposed involves only a change of rank without change of the combination itself, which was first published as *C. Harringtonia* var. *fastigiata* Schneider (l.c.); the name therefore, if cited as a straight trinomial, remains exactly the same whether based on *C. Harringtonia* var. *fastigiata* or f. *fastigiata;* the usual citation "comb. nov." would be incorrect. The term "translatio nova" proposed in 1920 by L. H. Bailey (Gent. Herb. **1**: 8) refers to transfers of epithets without change of rank, while his "status novus" refers to change of rank, such as varieties or forms to a species or a subdivision of a genus to a genus, or vice versa. Both these terms were proposed by Bailey to replace by more definite terms the rather comprehensive term "combinatio nova," but have been so far adopted by only few authors.

Cephalotaxus Harringtonia var. **nana** (Nakai), comb. nov.

Cephalotaxus nana Nakai in Bot. Mag. Tokyo, **33**: 193 (1919).
Cephalotaxus drupacea var. *nana* (Nakai) Rehder in Jour. Arnold Arb. **4**: 107 (1923).

Cephalotaxus Harringtonia var. **koreana** (Nakai), comb. nov.

Cephalotaxus koreana Nakai in Bot. Mag. Tokyo, **44**: 510 (1930).

This plant differs from *C. Harringtonia* var. *drupacea* chiefly in its habit, being a low cespitose shrub, only about 1–1.5 m. high. In its cespitose habit it differs also from the Japanese *C. Harringtonia* var. *nana*, which spreads by creeping rhizomes sending up shoots to 2 m. tall. The var. *koreana* is restricted to Korea according to Nakai who enumerates many specimens from different localities. I have seen only a specimen collected in 1917 by Wilson (No. 9605) at the base of Chirisan, province S. Keisho, which seems to differ from the Japanese varieties in the somewhat narrower and slender leaves inclined to be more falcate; unfortunately, Wilson says nothing of the habit.

Cephalotaxus Harringtonia var. **sinensis** (Rehd. & Wils.), comb. nov.

Cephalotaxus drupacea var. *sinensis* Rehder & Wilson in Sargent, Pl. Wilson. **2**: 3 (1914). — Pilger in Mitt. Deutsch. Dendr. Ges. **1916** (25): 22 (1917).

Carya illinoënsis (Wangenh.) K. Koch, Dendr. **1**: 593 (1869). — Robinson & Fernald, Gray's New Man. Bot. ed. 7, 331 (1908).

Juglans pecan Marshall, Arbust. Am. 69 (1785), nom. subnud.
Juglans illinoinensis Wangenheim, Beitr. Teutsch. Holzger. Forstwiss. Nordam. Holz. 54, t. 18 (1787), descr. fructus mala.
Juglans angustifolia Aiton, Hort. Kew. **3**: 361 (1789).
Juglans alba ε. *pacana* Castiglioni, Viaggio Stati Un. **2**: 262 (1790).
Juglans cylindrica Lamarck, Encycl. Méth. **4**: 505 (1798).
Juglans olivaeformis Hort. Paris ex Lamarck, l.c. (1798), pro syn. — Michaux, Fl. Bor.-Am. **2**: 192 (1803).
Carya olivaeformis Nuttall, Gen. N. Am. Pl. **2**: 221 (1818). — C. De Candolle in D.C., Prodr. **16,2**: 144 (1864).
Carya angustifolia Sweet, Hort. Brit. 97 (1827). — Nuttall, N. Am. Sylva, **1**: 41 (1842).
Carya tetraptera Liebmann in Vidensk. Medd. Nat. For. Kjöbenh. **1850**: 86 (1850).
Hicoria Pecan (Marsh.) Britton in Bull. Torr. Bot. Club, **15**: 282 (1888). — Sargent, Silva N. Am. **7**: 137, t. 338 (1895).
Hicorius pecan Sargent in Gard. & For. **2**: 460 (1889).
Carya Pecan Engler & Graebner in Notizbl. Bot. Gart. Berlin, **3**, App. **9**: 19 (1902). — Sargent, Man. Trees N. Am. ed. 2, 177, fig. 169 1922). — Non Nuttall (1842).

Since Britton proposed the combination *Hicoria Pecan*, basing it on

Juglans pecan of Marshall, the epithet has been generally accepted also under *Carya* except by Robinson & Fernald (l.c.) and a few others as correct, although Marshall's name is practically a nomen nudum, or at best a nomen subnudum. The only clue to the identity of the plant is the name Pecan, but without reference to any previous description or mention of it, the habitat given and the statement that the nuts are thin-shelled and that the young plants resemble "our young Pig-nut Hickerys," that is *C. cordiformis* (*Juglans alba minima* Marsh.), not *C. porcina*.

However, even if we accept *Juglans pecan* of Marshall as a valid name, the epithet transferred to *Carya* has no standing, since there is the older homonym of Nuttall (N. Am. Sylva, **1**: 41) of 1842 based on *Juglans Pecan* ? of Walter (Fl. Carol. 236, 1788) which is not *J. pecan* Marsh. and apparently identical with *Carya glabra* var. *megacarpa* (Sarg.) Sarg., though in the absence of a description of the fruit, definite identification is hardly possible.

The next oldest available name for this species is *Juglans illinoinensis* Wangenh. (l.c.) of 1787. He gives a description of the leaves with a figure of a leaf apparently based on plants growing in the nursery of William Prince on Long Island, who received seeds of this species in 1762 from Illinois. Unfortunately, the fruit as illustrated does not belong here, though its description at least partly, except as to the shape which is described as reniform, applies fairly well to the nut of the Pecan.

When K. Koch (l.c.) in 1869 transferred Wangenheim's specific epithet to *Carya,* he changed the spelling to *illinoënsis* which is a more correct spelling for an adjective derived from "Illinois" than *illinoinensis* possibly due to a typographical error or to a slip of the pen; it seems therefore advisable to accept Koch's correction as is also done by Robinson & Fernald, and call this species *Carya illinoënsis* (Wangenh.) K. Koch. Why a name published in such a standard work as the seventh edition of Gray's Manual was neglected is probably due chiefly to the fact that in that publication no extended synonymy could be cited and no reason given for the rejection of the name *C. Pecan.* It seems therefore, advisable to give above the full synonymy with explanatory remarks.

Quercus floribunda Wallich, Num. List no. 2773 (1830), nom. nov.

Quercus dilatata Lindley ex Wallich, Num. List no. 2785 (1830), nom. nud. — Royle, Ill. Bot. Himal. 346, t. 84, fig. 2 (1839), nom.; *"Q. dealbata"* sub tab. — A. de Candolle in DC., Prodr. **16,2**: 41 (1864). — Hooker f., Fl. Brit. Ind. **5**: 602 (1888). — Non Rafinesque (1838).

Quercus floribunda Wallich, Num. List, no. 2773 (1830), nom. nud.

The name *Q. dilatata* Lindl. was not validly published until 1864 by A. de Candolle (l.c.). In 1839 it was mentioned by Royle (l.c.) and a colored figure of a fruiting branch published, but without description. According to Royle, De Candolle (l.c.) and Hooker f. (l.c.), the figure bears the name "Q. dealbata" but in the copy in the Arboretum Library, the name on the plate is "Q. dilatata"; one can see, however, that the plate is apparently of a later issue in which the legend of the plate had been changed.

Since the name *Q. dilatata* was not validly published until 1864 it is a later homonym of *Q. dilatata* Rafinesque, Alsogr. Am. 24 (1838) which must be considered validly published though the description is rather incomplete, being based only on vegetative characters. Rafinesque's species seems to fit best *Q. marilandica* Muenchh. to which it has been referred as a synonym by Trelease, Am. Oaks, 199 (in Mem. Nat. Acad. Sci. **20:** 199) (1924); he also refers to it doubtfully under *Q. stellata* (p. 104). The name is not mentioned by Sargent in his Silva.

For *Q. dilatata* Lindl. ex De Candolle which must be rejected as a later homonym, the name *Q. floribunda* Wall. may be taken up, represented by his No. 2773 which entered into the original description of *Q. dilatata* as given by A. de Candolle. The epithet "floribunda" does not seem to have been used either in *Quercus, Pasania, Lithocarpus* or *Synaedrys* and its adoption therefore cannot be expected to cause any confusion.

To designate as nomen novum an old nomen nudum taken up in place of a name rejected because not conforming to the rules, may not seem literally correct, but having never before been used as a valid name of a species, it must be considered new from a nomenclatural point of view.

Quercus petraea Liebl. f. **insecata** (Rehd.), comb. nov.

Quercus sessiliflora γ. *laciniata* Koehne, Deutsche Dendr. 130 (1893). — H. Späth in Gartenfl. **61:** 497, fig. 54 (1912); in Mitt. Deutsch. Dendr. Ges. **1913**(*22*): 138, fig. 18 (1914). — Non Lamarck & De Candolle (1805).

Quercus sessilis (var. *decipiens*) f. *laciniata* (Koehne) Schneider, Ill. Handb. Laubh. **1:** 197, fig. 102f (1904). — Camus, Chênes, **2:** 230 (1939), pro var., non var. *laciniata* (Lam.) Camus, p. 212.

Quercus sessiliflora f. *insecata* Rehder in Jour. Arnold Arb. **1:** 135 (1919); Man. Cult. Trees Shrubs, 177 (1927).

Quercus petraea f. *laciniata* sensu Rehder, Man. Cult. Trees Shrubs, ed. 2, 167 (1940), quoad descr. et syn.; non (Lam.) Schwarz (1937).

In 1919 I proposed for the oak described as *Quercus sessiliflora* γ. *laciniata* Koehne the name *Q. sessiliflora* f. *insecata* because of the older homonym *Q. sessiliflora* β. *laciniata* (Lam.) Lamarck & De Candolle

of 1805 which represents a spontaneous form differing from the type chiefly in its broader more deeply lobed leaves, as figured by Schwarz, Monog. Eich. Eur. Mittelmeergeb. **2**(Atlas): t. 10, fig. 3, 4, 7 (1936); also Loudon, Arb. Brit. **3**: fig. 1577 apparently belongs here. The form represented by *Q. sessiliflora* γ. *laciniata* Koehne is known only as a cultivated plant; its leaves are elongated and rather narrow with irregular narrow lobes diverging mostly at an angle of less than 45°, otherwise they are very variable; its lobes may be few and remote or more numerous and obtuse to acute or even acuminate. Leaves of this form are figured by Schneider (l.c., fig. 102f) and by Späth (l.c.), in the latter figures reversions to the more typical shape are shown which occur rather frequently in this form.

Schwarz does not mention *Q. sessiliflora* var. *laciniata* Koehne at all, nor f. *insecata;* his *Q. petraea* f. *laciniata* is based solely on *Q. Robur* β. *laciniata* Lamarck (1785). Camus (l.c.) has both forms as valid varieties: *Q. sessilis* var. *laciniata* (Lam.) Camus on p. 212 and *Q. sessilis* var. *laciniata* (Koehne) Schneider on p. 230, without figures.

There can be no doubt that the two forms described as *Q. sessiliflora* var. *laciniata* are quite different and should not be confused. The form based on *Q. Robur* var. *laciniata* Lam. retains its varietal epithet under *Q. petraea* as f. *laciniata* (Lam.) Schwarz, while *Q. sessiliflora* var. *laciniata* Koehne becomes *Q. petraea* f. *insecata* (Rehd.) Rehd.

Aristolochia chrysops (Stapf) Wilson in herb., comb. nov.

Isotrema chrysops Stapf in Bot. Mag. **148**: t. 8957 (1923).

This Chinese specimen of eastern Szechuan and western Hupeh is closely related to *A. heterophylla* Hemsl., and the specimens collected by Wilson (nos. 367 and 4564) are recorded in Plantae Wilsonianae (**3**: 324) under *A. heterophylla.* The plant in cultivation was raised in 1908 from seed of Wilson no. 367. Another new species referred by Stapf to *Isotrema* is *I. lasiops* Stapf in Bot. Mag. **148**: t. 8957, p. [3] in nota (1923) based on Henry no. 4665 and Wilson no. 925, both referred to *A. heterophylla,* Henry no. 4665 by Hemsley (in Jour. Linn. Soc. Bot. **26**: 361, 1891) and Wilson no. 925 by Rehder & Wilson in Plantae Wilsonianae (l.c.). *Aristolochia chrysops* differs from *A. heterophylla* chiefly in the leaves being mostly distinctly hastate at base and in the golden-yellow color of the mouth and of the margin of the dull purple lobes of the perianth.

The generic name *Isotrema* Rafinesque in Jour. de Phys. Paris, **89**: 102. (1819); in Am. Monthl. Mag. **4**: 195 (1819) based on *A. Sipho* is synonymous with *Hocquartia* Dumortier (1822), but has three years'

priority and must be taken up, if the group is separated generically from *Aristolochia*.

Clematis Roylei, nom. nov.

Clematis nutans Royle, Ill. Bot. Himal. 51 (1839). — Hooker f. & Thomson, Fl. Ind. **1**: 10 (1855). — Hooker f., Fl. Brit. Ind. **1**: 5 (1872). — Kuntze in Verh. Bot. Ver. Brandenb. **26**: 129 (Monog. Clem.) (1885). — Non Crantz (1763).
Clematis nutans α. *normalis* Kuntze, l.c. (1885).

As *Clematis nutans* Royle is invalidated by the earlier homonym *C. nutans* Crantz, Stirp. Austr. **2**: 110 (1763); ed. 2, **1**: 127 (1769), the species has to receive a new name. Although *C. nutans* Crantz is illegitimate, being a renaming of *C. integrifolia* L., the later homonym is to be rejected according to Art. 61 of the International Rules of Botanical Nomenclature.

Prinsepia uniflora Batal. var. **serrata,** var. nov.

A typo differt foliis magis distantibus latioribus crenato- vel dentato-serratis, in ramis sterilibus ovato-lanceolatis vel ovato-oblongis manifeste dentato-serratis, 3.5–5 cm. longis et 1–1.5 cm. latis, in ramis floriferis oblongis vel lineari-oblongis, 1.5–4 cm. longis et 0.4–1 cm. latis.

Prinsepia uniflora Farrer in Jour. Roy. Hort. Soc. **42**: 103 (1916).
Prinsepia uniflora Batal. ex F. N. Meyer in U. S. Dept. Agric. Bur. Pl. Indust. Invent. Seeds Pl. Import. **42**: 53, no. 40023 (1918). — Rehder in Jour. Arnold Arb. **5**: 224 (1924), quoad spec. ex Kansu.

China. Kansu: Lien hao shan, Tao River valley below Titao, *J. F. Rock, 13225,* Aug. 1925 (**type**) (spiny shrub, 4 ft.; drupes scarlet, edible); below Lien hao shan, along sandy banks of stream, alt. 2500 m., *J. F. Rock, 13504,* Oct. 1925 (spiny shrub 5–6 ft.; leaves pale green, fruits red, juicy, edible); Valley of Motzuping, *J. F. Rock, 12605,* Apr. 1925 (shrub 3–4 ft.; flowers white to cream); between Choni and Lanchow, alt. 2600–3000 m., *R. C. Ching, 1033,* Sept. 19–21, 1923 (shrub to 7 ft., on clay soil); Upper Tebbu country, banks of Peshwekiang between Tsaruku & Pezhu, alt. 2500 m.; *J. F. Rock, 14564,* Aug. 30, 1926 (shrub 5–6 ft., with drooping branches; fruit wine-red); Lower Tebbu country, Pezhu valley, on low slopes, *J. F. Rock, 14957,* Oct. 1926; near Siku, *R. Farrer, 272* in 1914, seeds (l.c.); near Taochow, *F. N. Meyer, 2161a,* Dec. 1914, seeds (l.c.).

Cultivated: Arnold Arb. 1437–26 (from seed collected by J. F. Rock under 14564) *Kobuski & Roush,* Sept. 9, 1931; *A. Rehder,* Aug. 1, 1941; Arnold Arb. 82–27 (from seed coll. by J. F. Rock under no. 14957) *Kobuski & Roush,* Sept. 9, 1931; *A. Rehder,* Aug. 2, 1941; Arnold Arb. 21610 (seed collected by J. F. Rock under no. 13225) *A. Rehder,* Sept. 2,